Project No. 1251-100

Crude Oil Tank Farms Project, Agrood Area 30 (Module-1)

PETROJET Enppi EGPC

System ID	**030-LP-001**
System Description	**Substation building clean agent system**

Sr.	Pre-Commissioning and Commissioning Dossier Index	Applicable (Yes/No)
1	**Mechanical Completion Certificate (MCC)**	
2	**Ready for Startup Certificate (RFSU)**	
3	**System Punch Lists**	
4	**System Limits Marked Up P&ID**	
5	**System Index**	
6	**Piping Pre-Commissioning**	
	6.01) Piping Test Packs	
	6.02) Piping Pre-commissioning Check Lists	
7	**Piping Commissioning**	
	7.01) Service Test, GLT, CLT and N2 Purging Certificates	
	7.02) Piping Commissioning Check Lists	

Sr.	Pre-Commissioning and Commissioning Dossier Index	Applicable (Yes/No)
8	**Mechanical Pre-Commissioning**	
	8.01) System Mechanical Index	
	8.02) Equipment Drawings	
	8.03) Equipment Datasheets	
	8.04) Boxing-up Certificates	

	8.05) Grouting Certificates	
	8.06) Pre-Alignment Certificates	
	8.07) Mechanical Pre-Commissioning Checklists	
9	**Mechanical Commissioning**	
	9.01) Final Alignment Certificates	
	9.02) Motor Solo Run Certificates	
	9.03) Mechanical Run Test (MRT) Certificates	
	9.04) Mechanical Commissioning Checklists	
	9.05) Mechanical Supplier Check Lists & Reports	
10	**Instrumentation Pre-Commissioning**	
	10.01) System Instrument Index	
	10.02) Instrument Data Sheets	
	10.03) Instrument Cable Schedule	
	10.04) System Instrumentation Wiring Diagram	
	10.05) Hook-up Drawing (Mechanical & Pneumatic)	
	10.06) Instruments Cables Schedule	
	10.07) Instruments Cables Laying Certificates	
	10.08) Instruments Cables Termination Certificates	
	10.09) Instruments Cables Testing Certificates	
	10.10) Instruments Calibration Certificates	
	10.11) Instrument Loop Checks Certificates	
	10.12) Instrumentation Pre-Commissioning Check Lists	
	10.13) Instrumentation Supplier Check Lists & Reports	
11	**Instrumentation Commissioning**	
	11.01) Instrumentation Function Test Certificates	
	11.02) Instrumentation Supplier Check Lists & Reports	
Sr.	**Pre-Commissioning and Commissioning Dossier Index**	**Applicable (Yes/No)**
12	**Electrical Pre-Commissioning**	
	12.01) System Electrical Index	
	12.02) Electrical Drawings	
	12.03) Motor Datasheets	
	12.04) Electrical Cables Schedule	
	12.05) Electrical Cables Laying Certificates	
	12.06) Electrical Cables Testing Certificates	
	12.07) Electrical Cables Termination Certificates	
	12.08) FAT Reports & Certificates	
	12.09) SAT Reports & Certificates	
	12.10) Electrical Pre-Commissioning Check Lists	
	12.11) Electrical Supplier Check Lists & Reports	

13	**Electrical Commissioning**	
	13.01) Electrical -Commissioning Check Lists	
	13.02) Electrical Supplier Check Lists & Reports	
14	**Red Marked-up Drawings**	
	14.01) P&ID	
	14.02) Instrumentation Drawings	
	14.03) Electrical Drawings	

Enppi PETROJET بتروجت

Project: 01251-100
CRUDE OIL TANK FARM PROJECT (AGROOD AREA)

System ID	030-LP-001
System Description	Substation building clean agent system

Pre-commissioning and Commissioning Dossier Content:

Section	Description		Status	
1-	Mechanical Completion Certificate (MCC) Ready For Start-up (RFSU)			
2-	System Punch Lists			
3-	System Limits Marked Up			
4-	FAT Test Report & Certificates			
5-	System Index.			
6.A-	Electrical Pre-commissioning			
	6.A.1	General Arrangement and Wiring Diagrams		
	6.A.2	Single line Diagram		
	6.A.3	Electrical Panel Schedule		
	6.A.4	Electrical Cable Schedule		
	6.A.5	Pre-Commissioning Check List		
6.B-	Electrical Commissioning			
	6.B.1	Commissioning Check List		
7-	Red Mark-Up Drawings (If Any)			

System ID	030-LP-001
System Description	Substation building clean agent system

1-Mechanical Completion Certificate (MCC)

Enppi

SYSTEM MECHANICAL COMPLETION CERTIFICATE (MCC)

PROJECT TITLE	:	CRUDE OIL TANK FARM(AGROOD AREA
PROJECT No	:	1251-100
SYSTEM NAME	:	Substation Building Clean Agent System
SYSTEM ID	:	030-LP-001

THIS IS TO CERTIFY THAT:

- **THE ABOVE SYSTEM HAS BEEN FABRICATED, ERECTED, INSTALLED AND TESTED TO THE REQUIREMENTS OF THE CONTRACT DRAWINGS, SPECIFICATIONS, THE APPLICABLE CODES AND STANDARDS.**
- **ALL PRE-COMMISSIONING RELEVANT ACTIVITIES, TESTS, INSPECTIONS AND CHECKS HAVE BEEN CARRIED OUT FOR THIS SYSTEM AND FOUND ACCEPTABLE.**
- **Q/C DOCUMENTATION OF THE ABOVE SYSTEM HAS BEEN AUDITED BY THE CUSTOMER SITE QUALITY CONTROL AND FOUND COMPLETED.**
- **ALL PUNCH LIST ITEMS CATEGORY (A) IN THIS SUBSYSTEM WERE CLEARED.**
- **THIS SYTEM IS MECHANICALLY COMPLETED ON THE DATE 13/07/2021 AND READY FOR COMMISSIONING (RFC) WITH THE FOLLOWING EXCEPTIONS.**

EXCEPTIONS :

NOTE: ACCEPTANCE OF THE ABOVE SYSTEM DOES NOT RELIEVE ENPPI/CONSTRUCTION CONTRACTOR FROM THEIR CONTRACTUAL OBLIGATIONS AND RESPONSIBILITIES.

COMPANY	PETROJET	ENPPI	PPC
NAME	H. abd allah	Mohamed Abbas	Mohamed Abdel Salam
TITLE	—	C.sti. Mgr	M. A. Salam
SIGNATURE	QC engineer		9/8/2021
DATE	13/07/2021		

10000-000-KM2-FRM-0002 (10/13)

System ID	030-LP-001
System Description	Substation building clean agent system

2- Ready for Startup Certificate (RFSU)

PETROJET Enppi EGPC

READY FOR START UP CERTIFICATE

PROJECT TITLE	: EGPC CRUDE OIL TANK FARMS PROJECT (AGROOD-02) 30
PROJECT No.	: 1251-100
SYSTEM /AREA /PLANT	: Substation building clean agent system
SYSTEM /AREA /PLANT No.	: 030-LP-001

THIS IS TO CERTIFY THAT:

- THE MENTIONED SYSTEM /AREA /PLANT IS READY FOR START UP WHERE ALL MECHANICAL WORKS, PRECOMMISSIONING AND COMMISSIONING ACTIVITIES HAVE BEEN SUCCESSFULLY COMPLETED.
- MECHANICAL COMPLETION CERTIFICATE(S) FOR THE MENTIONED SYSTEM / AREA / PLANT HAVE BEEN SIGNED.
- ISSUANCE OF THIS READY FOR START UP CERTIFICATE(S) SHALL NOT RELIEVE CONTRACTOR(S) FROM THEIR OBLIGATIONS TO COMPLETE THE REMAINING SYSTEMS NOR FROM THEIR WARRANTY OBLIGATIONS AND OTHER PROVISIONS OF THE CONTRACT.
- THE FOLLOWING EXCEPTIONS AGREED TO BE CLEARED AFTER START UP AND WILL NOT PREVENT START UP ACTIVITIES.

EXCEPTIONS :

(*) Cable cellor room doors louver vent (Air vent) to be closed Permanently.

(*) For switchgear, HVAC duct fire damper access panel to be seal properly

- switchgear room door to be align and to be seal properly with weather strips.

COMPANY	CONSORTIUM	PPC
NAME	Ahmed El Shafie	Mohamed omar
TITLE	Commissioning Manager	I-Engineer
SIGNATURE	[signature]	M. omar
DATE	30-8-2021	5/9/2021

10000-000-EK8-FRM-0006 (03/15)

System ID	030-LP-001
System Description	Substation building clean agent system

3- System Punch Lists

PETROJET Enppi

Petroleum Pipelines Company شركة أنابيب البترول

EGPC

SYSTEM PUNCH LIST

PROJECT TITLE	: EGPC Crude Oil Tank Farms Project, Agrood Area 30 (Module-01)		
PROJECT NUMBER	: 1251-100	DISCIPLINE	: Mechanical
SYSTEM NAME	: Substation Building Clean Agent System	SYSTEM ID	: 030-LP-001
SUB-SYSTEM NAME	: Substation Building Clean Agent System	SUB-SYSTEM ID	: 030-LP-001

No	DESCRIPTION	CAT	ACTION BY	DISP	CLEARANCE APPROVED BY	
1	Clean agent nozzels to be installed	A	PTJ	Mech		
2	Touch up painting to be done	C	PTJ	painting		
3	slap opening to be sealed	B	PTJ	civil		
4	leak test to be done	A	PTJ	Mech		
5	system piping test pack to be reinstated	A	PTJ	Mech		
6	pilot network to be installed	A	PTJ	Mech		
7	openings to be sealed at cylinder room wall	B	PTJ	civil		
8	Houx keeping at cylinder room to be cleaned	C	PTJ	Mech		
9	All solonieds to be installed	A	~~PTJ~~ Enppi	~~EPI~~		
10	30-HS-006 to be installed	A	~~PTJ~~ Enppi	~~EPI~~ Enppi		
11	30-HS-007 to be installed	A	~~PTJ~~ Enppi	~~EPI~~ Enppi		
12	support in Battery room to be in Axis	A	PTJ	~~Elect~~		
	~~Support in Battery Room to be in Axis~~	~~A~~				

CAT: CATEGORY (A,B,C) , ACTION BY: (ENPPI, CONST. CONTRACTOR, SUPPLIER...), DISP: DISCIPLINE (PIP, MECH, ELECT, INST...)

COMPANY	PETROJET	ENPPI	PMC
NAME	Mahmoud Helmy	Abdullah Fathy	Mohamed Mahmoud Abdel Sadek
SIGNATURE			
DATE	25/5/2021	25/5/2021	25/05/2021

System ID	030-LP-001
System Description	Substation building clean agent system

4- System Limits Marked Up P&ID

System ID	030-LP-001
System Description	Substation building clean agent system

5- System Index

System ID	030-LP-001
System Description	Substation building clean agent system

6- Piping Pre-Commissioning

System ID	030-LP-001
System Description	Substation building clean agent system

6.01- Piping Test Packs

System ID	030-LP-001
System Description	Substation building clean agent system

6.02- Piping Pre-commissioning Check Lists

System ID	030-LP-001
System Description	Substation building clean agent system

7- Piping Commissioning

System ID	030-LP-001
System Description	Substation building clean agent system

7.01- Service Test, GLT, CLT and N2 Purging Certificates

PETROJET Enppi Petroleum Pipelines Company EGPC

Gross Leak Test (GLT)
Certificate of Completion and Acceptance

Client	Egyptian General Petroleum Corporation (EGPC)
Project No.	1251-100
Project Description	Crude Oil Tank Farm Project
Location	Agrood Area 30 (Module-01)
System	030-LP-001 (Substation Building Clean Agent System)
Loop No.	030-LP-001 (Substation Building Clean Agent System)
Test Medium	Air
Test Pressure	2.8 barg
Completion Date	12/6/ 2021
Attachments	Leak Test Loop Marked-up P&ID

Remarks

- This is to certify that the system described in this certificate of completion has been **Gross Leak Tested (GLT)** in accordance with the requirements of the scope of work.
- The test has been witnessed by client representatives and accepted as complete in all aspects on the data marked on the certificate of completion and acceptance.
- The test has been completed to the client satisfaction.

Performed by **PETROJET**	Supervised by **ENPPI**	Approved by **PPC**
Name: Mahoi Radwan	Name: Abdullah Fathy Ahmed Fishek	Name: Mohamed Abdel Sadek
Title: Site Manager	Title: Construction Engineer Commissioning Mgr	Title: Mechanical Engineer
Signature:	Signature:	Signature: M.A. Sadek
Date: 12.6.2021	Date: 12/6/2021	Date: 12/6/2021

Enppi	NEW CRUDE OIL TANK FARM	tyco Fire & Security UAE LLC
	PUFF TEST PROCEDURE FOR NOVEC 1230 FIRE SUPRESSION SYSTEM	
	Doc No: 1251-100-S24-P01-0004	Page 1 of 1

CCL/003	PUFF TEST OF THE NOVEC 1230 SYSTEM PIPEWORK

Contract Requirements: **System:** NOVEC 1230

Drawing No(s): Location: AGROOD, AREA-30, SUBSTATION

Reference : BATTERY ROOM Date:- 11-08-2021

To be witnessed:- Yes ✓ No By:- _____

Activities:	SIGNATURES		
	Ok	Not OK	N/A
MECHANICAL			
1. Confirm that the system installation is completed as per the final approved construction drawings.	OK		
2. Inspect all system components for any sign of damages, loose fittings etc.	OK		
3. Confirm orifice units are in place and are of correct size and its direction as per the as built calculation.	OK		
4. Confirm that all the plastic bags are places over all discharge nozzles.	OK		
5. Confirm that "Puff Test" gas is air.	OK		
6. Confirm that "Puff Test" pressure is 3 bar.	OK		
7. Inspect that all the plastic bags are below off confirming that the pipes are free from obstructions.	OK		
8. Confirm all nozzles size & drill size are installed in the same location as per the as built calculations.	OK		

RESULT ASSESSMENT:

SIGNATURE	Raj	Shah	M. Omar
REP. NAME	RAJASEKARAN	AMMAR ELSHAE	mohamed omar
DATE	11.08.2021	11.08.21	11-8-2021
REVIEW/APPROVA			
	SUB- CONTRACTOR	ENPPI	EGPC

Enppi	NEW CRUDE OIL TANK FARM	tyco Fire & Security UAE LLC
	PUFF TEST PROCEDURE FOR NOVEC 1230 FIRE SUPRESSION SYSTEM	
	Doc No: 1251-100-S24-P01-0004	Page 1 of 1

CCL/003 — **PUFF TEST OF THE NOVEC 1230 SYSTEM PIPEWORK**

Contract Requirements:
Drawing No(s):

System: NOVEC 1230

Location: AGROOD, AREA-20, SUBSTATION

Reference : CABLE CELLAR Date:- 11-08-2021

To be witnessed:- Yes ✓ No

By:- _____

Activities:	SIGNATURES Ok	Not OK	N/A
MECHANICAL			
1. Confirm that the system installation is completed as per the final approved construction drawings.	OK		
2. Inspect all system components for any sign of damages, loose fittings etc.	OK		
3. Confirm orifice units are in place and are of correct size and its direction as per the as built calculation.	OK		
4. Confirm that all the plastic bags are places over all discharge nozzles.	OK		
5. Confirm that "Puff Test" gas is air.	OK		
6. Confirm that "Puff Test" pressure is 3 bar.	OK		
7. Inspect that all the plastic bags are below off confirming that the pipes are free from obstructions.	OK		
8. Confirm all nozzles size & drill size are installed in the same location as per the as built calculations.	OK		

RESULT ASSESSMENT:

SIGNATURE	Raj	Shaf	H. omar
REP. NAME	RAJASEKARAN	Ahmed El Shaf	Mohamed omar
DATE	11-08-2021	11.08.21	11-8-2021
REVIEW/APPROVA			
	SUB- CONTRACTOR	ENPPI	EGPC

Enppi	NEW CRUDE OIL TANK FARM	tyco Fire & Security UAE LLC
	PUFF TEST PROCEDURE FOR NOVEC 1230 FIRE SUPRESSION SYSTEM	
	Doc No: 1251-100-S24-P01-0004	Page 1 of 1

CCL/003	PUFF TEST OF THE NOVEC 1230 SYSTEM PIPEWORK

Contract Requirements: **System:** NOVEC 1230

Drawing No(s): Location: AGROOD - AREA-30, SUBSTATION

Reference : SWITCH GEAR ROOM Date:- 11-08-2021

To be witnessed:- Yes ✓ No By:- _____

Activities:	SIGNATURES		
	Ok	Not OK	N/A
MECHANICAL			
1. Confirm that the system installation is completed as per the final approved construction drawings.	OK		
2. Inspect all system components for any sign of damages, loose fittings etc.	OK		
3. Confirm orifice units are in place and are of correct size and its direction as per the as built calculation.	OK		
4. Confirm that all the plastic bags are places over all discharge nozzles.	OK		
5. Confirm that "Puff Test" gas is air.	OK		
6. Confirm that "Puff Test" pressure is 3 bar.	OK		
7. Inspect that all the plastic bags are below off confirming that the pipes are free from obstructions.	OK		
8. Confirm all nozzles size & drill size are installed in the same location as per the as built calculations.	OK		

RESULT ASSESSMENT:

SIGNATURE	Raj	Shah	M. omar
REP. NAME	RAJASEKARAN	Ahmed El Shah	mohamed omar
DATE	11-08-2021	11.08.21	11.08.2021
REVIEW/APPROVA			
	SUB- CONTRACTOR	ENPPI	EGPC

Enppi	NEW CRUDE OIL TANK FARM	tyco Fire & Security UAE LLC
	PUFF TEST PROCEDURE FOR NOVEC 1230 FIRE SUPRESSION SYSTEM	
	Doc No: 1251-100-S24-P01-0004	Page 1 of 1

CCL/003	PUFF TEST OF THE NOVEC 1230 SYSTEM PIPEWORK

Contract Requirements: **System:** NOVEC 1230

Drawing No(s): Location: AGROOD, AREA-30, SUBSTATION

Reference : CONTROL ROOM Date:- 11-08-2021

To be witnessed:- Yes ✓ No By:- _____

Activities:	SIGNATURES		
	Ok	Not OK	N/A
MECHANICAL			
1. Confirm that the system installation is completed as per the final approved construction drawings.	OK		
2. Inspect all system components for any sign of damages, loose fittings etc.	OK		
3. Confirm orifice units are in place and are of correct size and its direction as per the as built calculation.	OK		
4. Confirm that all the plastic bags are places over all discharge nozzles.	OK		
5. Confirm that "Puff Test" gas is air.	OK		
6. Confirm that "Puff Test" pressure is 3 bar.	OK		
7. Inspect that all the plastic bags are below off confirming that the pipes are free from obstructions.	OK		
8. Confirm all nozzles size & drill size are installed in the same location as per the as built calculations.	OK		

RESULT ASSESSMENT:

SIGNATURE	Raj	Shafe	M. omar
REP. NAME	RAJASEKARAN	Ahmed El Shafie	mohamed omar
DATE	11-08-2021	11-8-2021	11-8-2021
REVIEW/APPROVA			
	SUB- CONTRACTOR	ENPPI	EGPC

Enppi	NEW CRUDE OIL TANK FARM PUFF TEST PROCEDURE FOR NOVEC 1230 FIRE SUPRESSION SYSTEM	tyco Fire & Security UAE LLC
	Doc No: 1251-100-S24-P01-0004	Page 1 of 1

CCL/003	PUFF TEST OF THE NOVEC 1230 SYSTEM PIPEWORK

Contract Requirements: **System:** NOVEC 1230

Drawing No(s): Location: AGROOD, AREA-30 SUBSTATION

Reference : TELECOM ROOM Date:- 11-08-2021

To be witnessed:- Yes ☑ No ☐ By:- _____

Activities:	SIGNATURES Ok	Not OK	N/A
MECHANICAL			
1. Confirm that the system installation is completed as per the final approved construction drawings.	OK		
2. Inspect all system components for any sign of damages, loose fittings etc.	OK		
3. Confirm orifice units are in place and are of correct size and its direction as per the as built calculation.	OK		
4. Confirm that all the plastic bags are places over all discharge nozzles.	OK		
5. Confirm that "Puff Test" gas is air.	OK		
6. Confirm that "Puff Test" pressure is 3 bar.	OK		
7. Inspect that all the plastic bags are below off confirming that the pipes are free from obstructions.	OK		
8. Confirm all nozzles size & drill size are installed in the same location as per the as built calculations.	OK		

RESULT ASSESSMENT:

SIGNATURE	Raj	Shaf	M. omar
REP. NAME	RAJASEKARAN	Ahmed El Shaf	mohamed omar
DATE	11-08-2021	11.08.21	11-8-2021
REVIEW/APPROVA			
	SUB- CONTRACTOR	ENPPI	EGPC

PETROJET Enppi

Petroleum Pipelines Company
شركة أنابيب البترول

EGPC

Gross Leak Test (GLT)
Certificate of Completion and Acceptance

Client	Egyptian General Petroleum Corporation (EGPC)
Project No.	1251-100
Project Description	Crude Oil Tank Farm Project
Location	Agrood Area 30 (Module-01)
System	030-LP-001 (Substation Building Clean Agent System)
Loop No.	030-LP-001 (Substation Building Clean Agent System)
Test Medium	Air
Test Pressure	2.8 barg
Completion Date	12/6/ 2021
Attachments	Leak Test Loop Marked-up P&ID

Remarks

- This is to certify that the system described in this certificate of completion has been **Gross Leak Tested (GLT)** in accordance with the requirements of the scope of work.
- The test has been witnessed by client representatives and accepted as complete in all aspects on the data marked on the certificate of completion and acceptance.
- The test has been completed to the client satisfaction.

Performed by **PETROJET**	Supervised by **ENPPI**	Approved by **PPC**
Name: Mahel Radwan	Name: Abdullah Fathy Ahmed Fishek	Name: Mohamed Abdel Sadek
Title: site Manager	Title: Construction Engineer Commissioning Mgr	Title: Mechanical Engineer
Signature:	Signature:	Signature:
Date: 12.6.2021	Date: 12/6/2021	Date: 12/6/2021

NFPA 2001 Clean Agent Enclosure Integrity Test

Conducted by:

Tyco Fire & Security U.A.E. L.L.C.
P.O. Box 3333
Abu Dhabi, U.A.E.

Phone 00971 2 6777 776
Fax 00971 2 6768 746

August 06, 2021
CF3G00129

ENCLOSURE INTEGRITY TEST REPORT

CF3G00129

Date of Test: **August 06, 2021** Time: **12:07 PM**
Tested by: **RAJASEKARAN ELUMALAI**
Job ID: **CF3G00129**

Company
Name: **PPC/ENNPI**
Address: **AGROOD-AREA-0303-EGYPT.**
EGYPT

Telephone: **01022994848** Facsimile:
E-mail: **mohamed.maher@enppi.com**
Contact: **Mr.Mohamed Maher**

Location
Name: **CRUDE OIL TANK FARM PROJECTS**
Address: **AGROOD- AREA-030**
AGROOD
EGYPT
Telephone: Facsimile:
E-mail: **ahmed.elshafie@enppi.com**
Contact: **Mr. Ahmed Elshafie**

Zone Number: **SUBSTIAON AGROOD AREA-030**
Zone Location: **BATTERY ROOM**
Zone Description: **BATTERY ROOM**

High Hazard: **BATTERY AND POWER CABINETS**
Height of High Hazard: **5.60 meters**
Minimum Protected Height: **1.80 meters**
Per:

Comments:

ENCLOSURE INTEGRITY TEST REPORT

CF3G00129

Zone Data

Protected Volume:	**442.95 cu m**	
Maximum protected height:	**5.60 m**	(includes protected subfloor, if any)
Minimum Protected height:	**1.80 m**	
Temperature inside zone:	**28 C**	
Temperature outside zone:	**24 C**	
Suppression Gas:	**Novec 1230 Sapphire**	
Gas design concentration:	**4.50%**	
Weight/Volume of gas:	**0.00 kg**	

Maximum acceptable leakage area for 10 minute hold time: **4599.930 sq cm 0.460 sq m**

Test Checklist

Tanks disconnected?	**Y**
Free return air flow path?	**Y**
Outside air pressure tube connected?	**Y**
HVAC system off?	**Y**
Panel in discharge mode?	**N**
Dampers activated?	**Y**
Static pressure present?	**Y**

Test Data

Static pressure: **0.2 pa** **(air is blowing out of zone)**

Zone depressurization: **38.2 pa**

Air flow volume: **884 cfm**

Orifice plate ratio: **1.00**

Indicated leakage area (depressurization): **800.060 sq cm 0.080 sq m**

Zone pressurization: **37.2 pa**

Air flow volume: **1024 cfm**

Orifice plate ratio: **1.00**

Indicated leakage area (pressurization): **1086.781 sq cm 0.109 sq m**

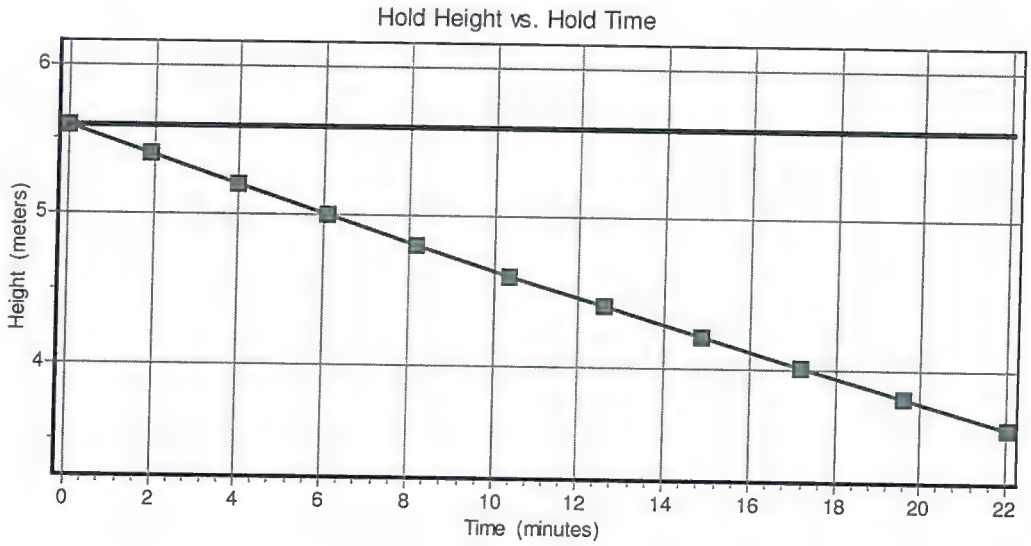
NFPA 2001, 2000 edition, Appendix C, Enclosure Integrity Test Procedure Leakage Area calculation results:

Leakage area: **943.420 sq cm 0.094 sq m** Predicted hold time at **1.80 m is 48.30 minutes.**

ENCLOSURE INTEGRITY TEST REPORT

CF3G00129

Hold Height	Hold Time
5.60	**0.00**
5.41	**1.92**
5.21	**3.97**
5.01	**6.06**
4.81	**8.20**
4.61	**10.37**
4.41	**12.60**
4.21	**14.87**
4.01	**17.20**
3.81	**19.59**
3.61	**22.04**



ENCLOSURE INTEGRITY TEST REPORT

CF3G00129

Leakage Survey

Problem Area	Rsp	Cor	Comments
Walls floor to deck?		**Yes**	
Walls caulked at floor?	**N/A**		
Walls caulked at deck?	**N/A**		
Doors weather-stipped?			
Door, drop seals?		**Yes**	
Door closers installed and adjusted?		**Yes**	
Windows caulked?	**N/A**		
Exiting conduits sealed?		**Yes**	
Exiting cables sealed?		**Yes**	
Cable trays sealed?		**Yes**	
All holes, penetrations sealed?		**Yes**	
Floor drains trapped and filled?	**N/A**		
Dampers installed on all exiting ducts?		**Yes**	
Dampers working and adjusted?		**Yes**	
Block walls painted?		**Yes**	
Ceiling tiles clipped?	**N/A**		
HVAC shut down?		**Yes**	
Gas exhaust dampered?			
Gas exhaust damper closed?			

Rsp = Response
Cor = Corrected
Par = Partial
RY = Reported Yes
? = Unknown
N/A = Not Applicable
I/A = Inaccessible

ENCLOSURE INTEGRITY TEST REPORT

CF3G00129

Authority Having Jurisdiction

Name:	**RAJASEKARAN ELUMALAI**		
Title:	**COMMISSIONING ENGINEER**		
Company:	**TYCO FIRE and SECURITY**		
Telephone:	**00971563988654**	Facsimile:	**026768746**
E-mail:	**rajasekaran.elumalai@jci.com**		

Attendance

Mr.Mohamed Omar	**PPC**	M. omar
Mr. Mohamed Elfeky	**ENPPI**	
Mohamed Maher	**ENPPI**	

Conditions

This test is a calculated prediction of the hold time and is based on the NFPA Enclosure Integrity Procedure, Appendix B, NFPA 12A, 1992 edition and Appendix C, NFPA 2001, 2000 edition and on the condition of the room at the time of the test. This test was conducted in accordance with the NFPA procedure.

The Software was produced by Fire Safety Technology division of Worldwide Trade & Services, Inc. and is based on the equations and calculations in the above cited NFPA standards.

The Fire Safety Technology division nor Worldwide Trade & Services, Inc. assumes no responsibility or liability for the passage of a discharge test or for maintaining the concentration of the suppression gas for the predicted time in case of an actual emergency.

To assure the sealing integrity of the zone, NFPA 2001, 2000 edition Section 4-4 requires an annual inspection and possible retesting of the zone.

Test conducted by:

RAJASEKARAN ELUMALAI

ATTENTION

This room is protected with a clean agent gaseous fire extinguishing system.

To be effective in a fire emergency the fire suppression agent must be retained in the room.

Upon installation of this system, all doors were equipped with automatic closers, weather stripping and floor seals; all cables and conduits leading in or out of the room were sealed (including those above the ceiling or under the raised floor); and all leaks or cracks were sealed. As required, the room was tested per NFPA 2001, 2000 edition, Appendix C, Enclosure Integrity Procedure to assure it was properly sealed to retain the fire suppression agent.

For the safety of the occupants and equipment in this room:

1. Doors must not be blocked open.
2. All weather stripping and seals must be maintained in good operating condition.
3. Any new cables or conduits leading in or out of the room must be caulked and sealed.
4. Any holes or penetrations through the walls must be repaired and sealed.

To assure the sealing integrity of this room, NFPA 2001, 2000 edition, Section 4-4 requires an annual inspection and possible retesting of this room.

Test results:

Date:	**August 06, 2021**	Leakage Area:	**0.094 sq m**
Minimum Hold Height:	**1.80 m**	Hold Time:	**48.30 minutes**

Next Inspection due one year from Test Date.

For more information or to schedule an inspection contact:

Tyco Fire & Security U.A.E. L.L.C.
P.O. Box 3333
Abu Dhabi, U.A.E.

Phone 00971 2 6777 776
Fax 00971 2 6768 746

NFPA 2001 Clean Agent Enclosure Integrity Test

Conducted by:

Tyco Fire & Security U.A.E. L.L.C.
P.O. Box 3333
Abu Dhabi, U.A.E.

Phone 00971 2 6777 776
Fax 00971 2 6768 746

August 09, 2021
CF3G00129

ENCLOSURE INTEGRITY TEST REPORT

CF3G00129

Date of Test: **August 09, 2021** Time: **2:30 PM**
Tested by: **RAJASEKARAN ELUMALAI**
Job ID: **CF3G00129**

Company
Name: **PPC/ENNPI**
Address: **AGROOD-AREA-030-EGYPT.**
EGYPT

Telephone: **01022994848** Facsimile:
E-mail: **mohamed.maher@enppi.com**
Contact: **Mr.Mohamed Maher**

Location
Name: **CRUDE OIL TANK FARM PROJECTS**
Address: **AGROOD AREA-30**
AGROOD
EGYPT
Telephone: **01022994848** Facsimile:
E-mail: **ahmed.elshafie@enppi.com**
Contact: **Mr.Ahmed Elshafie**

Zone Number: **AGROOD AREA-30 SUBSTIAON**
Zone Location: **CONTROL ROOM**
Zone Description: **CONTROL ROOM**

High Hazard: **FGS/PLC CABINET**
Height of High Hazard: **5.60 meters**
Minimum Protected Height: **2.10 meters**
Per:

Comments: **HVAC return duct does not have fire damper. fire damper to be install.**

ENCLOSURE INTEGRITY TEST REPORT

CF3G00129

Zone Data

Protected Volume:	**183.68 cu m**	
Maximum protected height:	**5.60 m**	(includes protected subfloor, if any)
Minimum Protected height:	**2.10 m**	
Temperature inside zone:	**28 C**	
Temperature outside zone:	**24 C**	
Suppression Gas:	**Novec 1230 Sapphire**	
Gas design concentration:	**4.50%**	
Weight/Volume of gas:	**0.00 kg**	

Maximum acceptable leakage area for 10 minute hold time: **1707.386 sq cm 0.171 sq m**

Test Checklist

Tanks disconnected?	**Y**
Free return air flow path?	**Y**
Outside air pressure tube connected?	**Y**
HVAC system off?	**Y**
Panel in discharge mode?	**N**
Dampers activated?	**Y**
Static pressure present?	**Y**

Test Data

Static pressure: **0.5 pa** **(air is blowing into zone)**

Zone depressurization: **37.2 pa**

Air flow volume: **1128 cfm**

Orifice plate ratio: **1.00**

Indicated leakage area (depressurization): **1254.859 sq cm 0.125 sq m**

Zone pressurization: **32.0 pa**

Air flow volume: **1293 cfm**

Orifice plate ratio: **1.00**

Indicated leakage area (pressurization): **1218.744 sq cm 0.122 sq m**

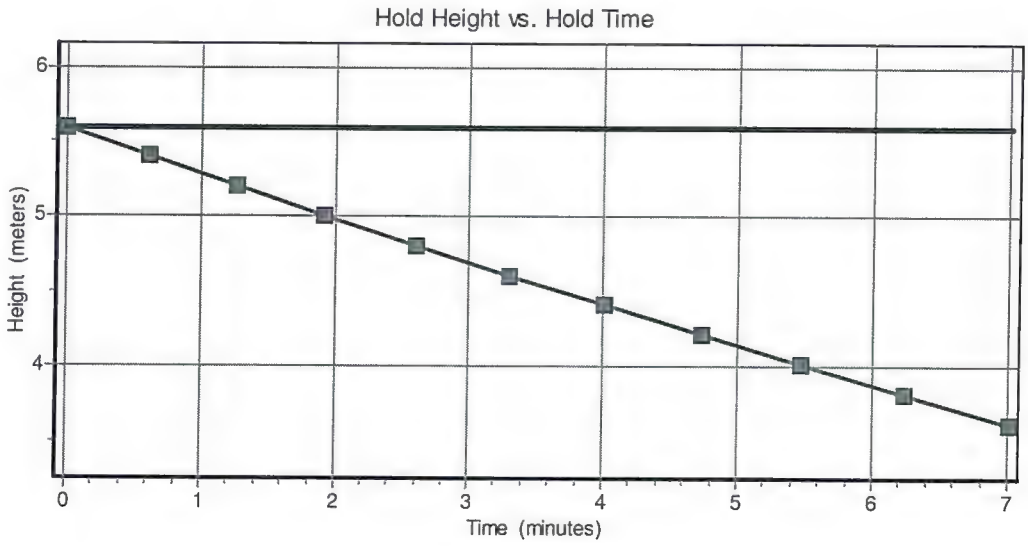
NFPA 2001, 2000 edition, Appendix C, Enclosure Integrity Test Procedure Leakage Area calculation results:

Leakage area: **1236.801 sq cm 0.124 sq m** Predicted hold time at **2.10 m is 13.80 minutes.**

ENCLOSURE INTEGRITY TEST REPORT

CF3G00129

Hold Height	Hold Time
5.60	**0.00**
5.41	**0.61**
5.21	**1.26**
5.01	**1.93**
4.81	**2.61**
4.61	**3.30**
4.41	**4.01**
4.21	**4.73**
4.01	**5.48**
3.81	**6.24**
3.61	**7.02**



ENCLOSURE INTEGRITY TEST REPORT

CF3G00129

Leakage Survey

Problem Area	Rsp	Cor	Comments
Walls floor to deck?		**Yes**	
Walls caulked at floor?	**N/A**		
Walls caulked at deck?	**N/A**		
Doors weather-stipped?		**Yes**	
Door, drop seals?		**Yes**	
Door closers installed and adjusted?		**Yes**	
Windows caulked?	**N/A**		
Exiting conduits sealed?		**Yes**	
Exiting cables sealed?		**Yes**	
Cable trays sealed?		**Yes**	
All holes, penetrations sealed?		**Yes**	
Floor drains trapped and filled?	**N/A**		
Dampers installed on all exiting ducts?		**Yes**	
Dampers working and adjusted?		**Yes**	
Block walls painted?		**Yes**	
Ceiling tiles clipped?	**N/A**		
HVAC shut down?		**Yes**	
Gas exhaust dampered?	**N/A**		
Gas exhaust damper closed?		**Yes**	

Rsp = Response
Cor = Corrected
Par = Partial
RY = Reported Yes
? = Unknown
N/A = Not Applicable
I/A = Inaccessible

ENCLOSURE INTEGRITY TEST REPORT

CF3G00129

Authority Having Jurisdiction

Name: **RAJASEKARAN ELUMALAI**

Title: **COMMISSIONING ENGINEER**

Company: **TYCO FIRE and SECURITY**

Telephone: **00971563988654** Facsimile: **026768746**

E-mail: **rajasekaran.elumalai@jci.com**

Attendance

Mr.HAFEZ NOUR **PPC**

Mr. HOSSAM SALAH **ENPPI**

Conditions

This test is a calculated prediction of the hold time and is based on the NFPA Enclosure Integrity Procedure, Appendix B, NFPA 12A, 1992 edition and Appendix C, NFPA 2001, 2000 edition and on the condition of the room at the time of the test. This test was conducted in accordance with the NFPA procedure.

The Software was produced by Fire Safety Technology division of Worldwide Trade & Services, Inc. and is based on the equations and calculations in the above cited NFPA standards.

The Fire Safety Technology division nor Worldwide Trade & Services, Inc. assumes no responsibility or liability for the passage of a discharge test or for maintaining the concentration of the suppression gas for the predicted time in case of an actual emergency.

To assure the sealing integrity of the zone, NFPA 2001, 2000 edition Section 4-4 requires an annual inspection and possible retesting of the zone.

Test conducted by:

RAJASEKARAN ELUMALAI

ATTENTION

This room is protected with a clean agent gaseous fire extinguishing system.

To be effective in a fire emergency the fire suppression agent must be retained in the room.

Upon installation of this system, all doors were equipped with automatic closers, weather stripping and floor seals; all cables and conduits leading in or out of the room were sealed (including those above the ceiling or under the raised floor); and all leaks or cracks were sealed. As required, the room was tested per NFPA 2001, 2000 edition, Appendix C, Enclosure Integrity Procedure to assure it was properly sealed to retain the fire suppression agent.

For the safety of the occupants and equipment in this room:

1. Doors must not be blocked open.
2. All weather stripping and seals must be maintained in good operating condition.
3. Any new cables or conduits leading in or out of the room must be caulked and sealed.
4. Any holes or penetrations through the walls must be repaired and sealed.

To assure the sealing integrity of this room, NFPA 2001, 2000 edition, Section 4-4 requires an annual inspection and possible retesting of this room.

Test results:

Date:	**August 09, 2021**	Leakage Area:	**0.124 sq m**
Minimum Hold Height:	**2.10 m**	Hold Time:	**13.80 minutes**

Next Inspection due one year from Test Date.

For more information or to schedule an inspection contact:

Tyco Fire & Security U.A.E. L.L.C.
P.O. Box 3333
Abu Dhabi, U.A.E.

Phone 00971 2 6777 776
Fax 00971 2 6768 746

NFPA 2001 Clean Agent Enclosure Integrity Test

Conducted by:

Tyco Fire & Security U.A.E. L.L.C.
P.O. Box 3333
Abu Dhabi, U.A.E.

Phone 00971 2 6777 776
Fax 00971 2 6768 746

August 09, 2021
CF3G00129

ENCLOSURE INTEGRITY TEST REPORT

CF3G00129

Date of Test: **August 09, 2021** Time: **1:51 PM**
Tested by: **RAJASEKARAN ELUMALAI**
Job ID: **CF3G00129**

Company
Name: **PPC/ENNPI**
Address: **AGROD-AREA-030-EGYPT.**
EGYPT

Telephone: **01022994848** Facsimile:
E-mail: **mohamed.maher@enppi.com**
Contact: **Mohamed Maher**

Location
Name: **CRUDE OIL TANK FARM PROJECTS**
Address: **AGROOD-AREA-30**
AGROOD
EGYPT
Telephone: Facsimile:
E-mail: **ahmed.elshafie@enppi.com**
Contact: **Mr.Ahmed Elshafie**

Zone Number: **SUBSTIAON-30**
Zone Location: **TELECOM ROOM**
Zone Description: **TELECOM ROOM**

High Hazard: **TELECOM CABINET**
Height of High Hazard: **5.60 meters**
Minimum Protected Height: **2.00 meters**
Per:

Comments: **Telecom room doors Louver vent(Air vent) to be closed permanently and HVAC return duct does not have fire damper. fire damper to be install.**

ENCLOSURE INTEGRITY TEST REPORT

CF3G00129

Zone Data

Protected Volume:	**81.76 cu m**	
Maximum protected height:	**5.60 m**	(includes protected subfloor, if any)
Minimum Protected height:	**2.00 m**	
Temperature inside zone:	**28 C**	
Temperature outside zone:	**24 C**	
Suppression Gas:	**Novec 1230 Sapphire**	
Gas design concentration:	**4.50%**	
Weight/Volume of gas:	**0.00 kg**	

Maximum acceptable leakage area for 10 minute hold time: **788.930 sq cm 0.079 sq m**

Test Checklist

Tanks disconnected?	**Y**
Free return air flow path?	**Y**
Outside air pressure tube connected?	**Y**
HVAC system off?	**Y**
Panel in discharge mode?	**N**
Dampers activated?	**Y**
Static pressure present?	**Y**

Test Data

Static pressure: **1.0 pa** **(air is blowing out of zone)**

Zone depressurization: **36.3 pa**

Air flow volume: **578 cfm**

Orifice plate ratio: **1.00**

Indicated leakage area (depressurization): **493.544 sq cm 0.049 sq m**

Zone pressurization: **38.0 pa**

Air flow volume: **672 cfm**

Orifice plate ratio: **1.00**

Indicated leakage area (pressurization): **780.530 sq cm 0.078 sq m**

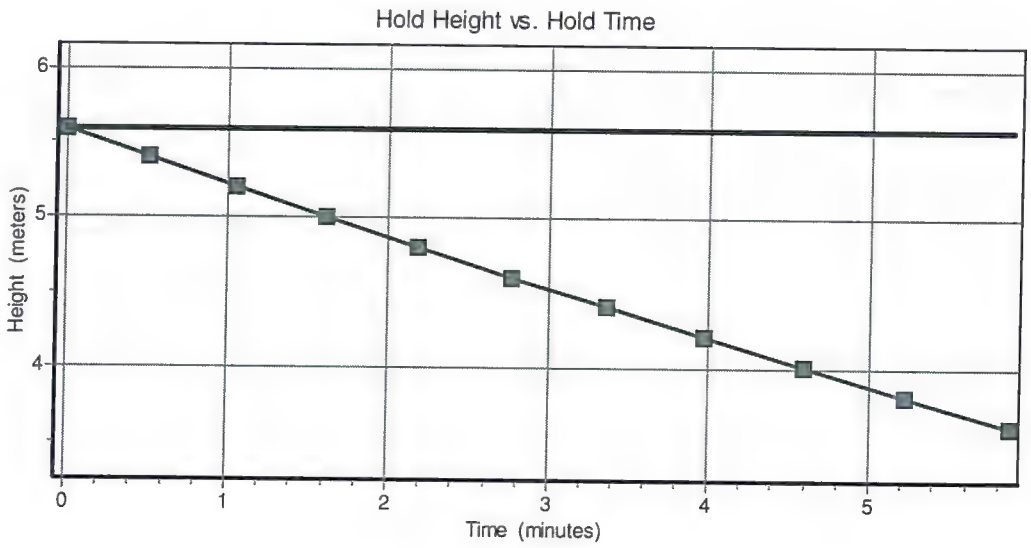
NFPA 2001, 2000 edition, Appendix C, Enclosure Integrity Test Procedure Leakage Area calculation results:

Leakage area: **637.037 sq cm 0.064 sq m** Predicted hold time at **2.00 m is 11.86 minutes.**

ENCLOSURE INTEGRITY TEST REPORT

CF3G00129

Hold Height	Hold Time
5.60	**0.00**
5.41	**0.51**
5.21	**1.06**
5.01	**1.62**
4.81	**2.19**
4.61	**2.77**
4.41	**3.36**
4.21	**3.97**
4.01	**4.59**
3.81	**5.22**
3.61	**5.87**



ENCLOSURE INTEGRITY TEST REPORT

CF3G00129

Leakage Survey

Problem Area	Rsp	Cor	Comments
Walls floor to deck?		**Yes**	
Walls caulked at floor?	**N/A**		
Walls caulked at deck?	**N/A**		
Doors weather-stipped?		**Yes**	
Door, drop seals?		**Yes**	
Door closers installed and adjusted?		**Yes**	
Windows caulked?	**N/A**		
Exiting conduits sealed?		**Yes**	
Exiting cables sealed?		**Yes**	
Cable trays sealed?		**Yes**	
All holes, penetrations sealed?		**Yes**	
Floor drains trapped and filled?	**N/A**		
Dampers installed on all exiting ducts?		**Yes**	
Dampers working and adjusted?		**Yes**	
Block walls painted?		**Yes**	
Ceiling tiles clipped?	**N/A**		
HVAC shut down?		**Yes**	
Gas exhaust dampered?	**N/A**		
Gas exhaust damper closed?		**Yes**	

Rsp = Response
Cor = Corrected
Par = Partial
RY = Reported Yes
? = Unknown
N/A = Not Applicable
I/A = Inaccessible

ENCLOSURE INTEGRITY TEST REPORT

CF3G00129

Authority Having Jurisdiction

Name:	**RAJASEKARAN ELUMALAI**		
Title:	**COMMISSIONING ENGINEER**		
Company:	**TYCO FIRE and SECURITY**		
Telephone:	**00971563988654**	Facsimile:	**026768746**
E-mail:	**rajasekaran.elumalai@jci.com**		

Attendance

Mr. HAFEZ NOUR — **PPC**

Mr. HOSSAM SALAH — **ENPPI**

Conditions

This test is a calculated prediction of the hold time and is based on the NFPA Enclosure Integrity Procedure, Appendix B, NFPA 12A, 1992 edition and Appendix C, NFPA 2001, 2000 edition and on the condition of the room at the time of the test. This test was conducted in accordance with the NFPA procedure.

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The Fire Safety Technology division nor Worldwide Trade & Services, Inc. assumes no responsibility or liability for the passage of a discharge test or for maintaining the concentration of the suppression gas for the predicted time in case of an actual emergency.

To assure the sealing integrity of the zone, NFPA 2001, 2000 edition Section 4-4 requires an annual inspection and possible retesting of the zone.

Test conducted by:

RAJASEKARAN ELUMALAI

ATTENTION

This room is protected with a clean agent gaseous fire extinguishing system.

To be effective in a fire emergency the fire suppression agent must be retained in the room.

Upon installation of this system, all doors were equipped with automatic closers, weather stripping and floor seals; all cables and conduits leading in or out of the room were sealed (including those above the ceiling or under the raised floor); and all leaks or cracks were sealed. As required, the room was tested per NFPA 2001, 2000 edition, Appendix C, Enclosure Integrity Procedure to assure it was properly sealed to retain the fire suppression agent.

For the safety of the occupants and equipment in this room:

1. Doors must not be blocked open.
2. All weather stripping and seals must be maintained in good operating condition.
3. Any new cables or conduits leading in or out of the room must be caulked and sealed.
4. Any holes or penetrations through the walls must be repaired and sealed.

To assure the sealing integrity of this room, NFPA 2001, 2000 edition, Section 4-4 requires an annual inspection and possible retesting of this room.

Test results:

Date:	**August 09, 2021**	Leakage Area:	**0.064 sq m**
Minimum Hold Height:	**2.00 m**	Hold Time:	**11.86 minutes**

Next Inspection due one year from Test Date.

For more information or to schedule an inspection contact:

Tyco Fire & Security U.A.E. L.L.C.
P.O. Box 3333
Abu Dhabi, U.A.E.

Phone 00971 2 6777 776
Fax 00971 2 6768 746

NFPA 2001 Clean Agent Enclosure Integrity Test

Conducted by:

Tyco Fire & Security U.A.E. L.L.C.
P.O. Box 3333
Abu Dhabi, U.A.E.

Phone 00971 2 6777 776
Fax 00971 2 6768 746

August 31, 2021
CF3G00129

ENCLOSURE INTEGRITY TEST REPORT

CF3G00129

Date of Test: **August 31, 2021** Time: **5:01 PM**
Tested by: **RAJASEKARAN ELUMALAI**
Job ID: **CF3G00129**

Company
Name: **PPC/ENNPI**
Address: **AGROD-AREA-030-EGYPT.**
EGYPT

Telephone: **01022994848** Facsimile:
E-mail: **mohamed.maher@enppi.com**
Contact: **Mohamed Maher**

Location
Name: **CRUDE OIL TANK FARM PROJECTS**
Address: **AGROOD-AREA-30**
AGROOD
EGYPT
Telephone: Facsimile:
E-mail: **ahmed.elshafie@enppi.com**
Contact: **Mr.Ahmed Elshafie**

Zone Number: **SUBSTIAON-30**
Zone Location: **SWITCH GEAR ROOM**
Zone Description: **SWITCH GEAR ROOM**

High Hazard: **ELECTRICAL CABINETS**
Height of High Hazard: **5.60 meters**
Minimum Protected Height: **2.75 meters**
Per:

Comments: **1. HVAC duct fire damper access panel to be seal properly. 2. Switch gear room door to be align and to be seal properly with weather strips.**

ENCLOSURE INTEGRITY TEST REPORT

CF3G00129

Zone Data

Protected Volume:	**2200.00 cu m**	
Maximum protected height:	**5.60 m**	(includes protected subfloor, if any)
Minimum Protected height:	**2.75 m**	
Temperature inside zone:	**28 C**	
Temperature outside zone:	**32 C**	
Suppression Gas:	**Novec 1230 Sapphire**	
Gas design concentration:	**4.50%**	
Weight/Volume of gas:	**0.00 kg**	

Maximum acceptable leakage area for 10 minute hold time: **15786.667 sq cm 1.579 sq m**

Test Checklist

Tanks disconnected?	**Y**
Free return air flow path?	**Y**
Outside air pressure tube connected?	**Y**
HVAC system off?	**Y**
Panel in discharge mode?	**N**
Dampers activated?	**Y**
Static pressure present?	**Y**

Test Data

Static pressure:	**1.8 pa**	**(air is blowing out of zone)**
Zone depressurization:	**37.4 pa**	
Air flow volume:	**2920 cfm**	
Orifice plate ratio:	**1.00**	
Indicated leakage area (depressurization):	**2348.815 sq cm**	**0.235 sq m**
Zone pressurization:	**37.3 pa**	
Air flow volume:	**3070 cfm**	
Orifice plate ratio:	**1.00**	
Indicated leakage area (pressurization):	**3864.118 sq cm**	**0.386 sq m**

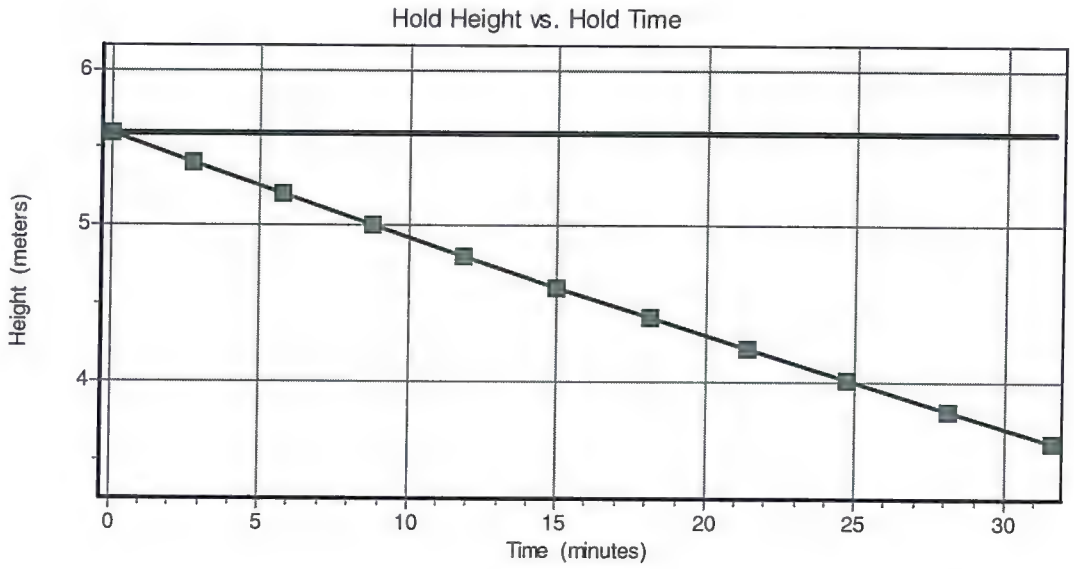
NFPA 2001, 2000 edition, Appendix C, Enclosure Integrity Test Procedure Leakage Area calculation results:

Leakage area: **3106.467 sq cm 0.311 sq m** Predicted hold time at **2.75 m is 47.60 minutes.**

ENCLOSURE INTEGRITY TEST REPORT

CF3G00129

Hold Height	Hold Time
5.60	**0.00**
5.41	**2.77**
5.21	**5.74**
5.01	**8.75**
4.81	**11.82**
4.61	**14.95**
4.41	**18.14**
4.21	**21.40**
4.01	**24.72**
3.81	**28.12**
3.61	**31.60**



ENCLOSURE INTEGRITY TEST REPORT

CF3G00129

Leakage Survey

Problem Area	Rsp	Cor	Comments
Walls floor to deck?		**Yes**	
Walls caulked at floor?	**N/A**		
Walls caulked at deck?	**N/A**		
Doors weather-stipped?		**Yes**	
Door, drop seals?		**Yes**	
Door closers installed and adjusted?		**Yes**	
Windows caulked?	**N/A**		
Exiting conduits sealed?		**Yes**	
Exiting cables sealed?		**Yes**	
Cable trays sealed?		**Yes**	
All holes, penetrations sealed?		**Yes**	
Floor drains trapped and filled?	**N/A**		
Dampers installed on all exiting ducts?		**Yes**	
Dampers working and adjusted?		**Yes**	
Block walls painted?		**Yes**	
Ceiling tiles clipped?	**N/A**		
HVAC shut down?		**Yes**	
Gas exhaust dampered?			
Gas exhaust damper closed?			

Rsp = Response
Cor = Corrected
Par = Partial
RY = Reported Yes
? = Unknown
N/A = Not Applicable
I/A = Inaccessible

ENCLOSURE INTEGRITY TEST REPORT

CF3G00129

Authority Having Jurisdiction

Name: **RAJASEKARAN ELUMALAI**

Title: **COMMISSIONING ENGINEER**

Company: **TYCO FIRE and SECURITY**

Telephone: **00971563988654** Facsimile: **026768746**

E-mail: **rajasekaran.elumalai@jci.com**

Attendance

Mr. HAFEZ NOUR **PPC** M. omar

Mr. HOSSAM SALAH **ENPPI** for

Conditions

This test is a calculated prediction of the hold time and is based on the NFPA Enclosure Integrity Procedure, Appendix B, NFPA 12A, 1992 edition and Appendix C, NFPA 2001, 2000 edition and on the condition of the room at the time of the test. This test was conducted in accordance with the NFPA procedure.

The Software was produced by Fire Safety Technology division of Worldwide Trade & Services, Inc. and is based on the equations and calculations in the above cited NFPA standards.

The Fire Safety Technology division nor Worldwide Trade & Services, Inc. assumes no responsibility or liability for the passage of a discharge test or for maintaining the concentration of the suppression gas for the predicted time in case of an actual emergency.

To assure the sealing integrity of the zone, NFPA 2001, 2000 edition Section 4-4 requires an annual inspection and possible retesting of the zone.

Test conducted by:

Raj

RAJASEKARAN ELUMALAI

ATTENTION

This room is protected with a clean agent gaseous fire extinguishing system.

To be effective in a fire emergency the fire suppression agent must be retained in the room.

Upon installation of this system, all doors were equipped with automatic closers, weather stripping and floor seals; all cables and conduits leading in or out of the room were sealed (including those above the ceiling or under the raised floor); and all leaks or cracks were sealed. As required, the room was tested per NFPA 2001, 2000 edition, Appendix C, Enclosure Integrity Procedure to assure it was properly sealed to retain the fire suppression agent.

For the safety of the occupants and equipment in this room:

1. Doors must not be blocked open.
2. All weather stripping and seals must be maintained in good operating condition.
3. Any new cables or conduits leading in or out of the room must be caulked and sealed.
4. Any holes or penetrations through the walls must be repaired and sealed.

To assure the sealing integrity of this room, NFPA 2001, 2000 edition, Section 4-4 requires an annual inspection and possible retesting of this room.

Test results:

Date:	**August 31, 2021**	Leakage Area:	**0.311 sq m**
Minimum Hold Height:	**2.75 m**	Hold Time:	**47.60 minutes**

Next Inspection due one year from Test Date.

For more information or to schedule an inspection contact:

Tyco Fire & Security U.A.E. L.L.C.
P.O. Box 3333
Abu Dhabi, U.A.E.

Phone 00971 2 6777 776
Fax 00971 2 6768 746

NFPA 2001 Clean Agent Enclosure Integrity Test

Conducted by:

Tyco Fire & Security U.A.E. L.L.C.
P.O. Box 3333
Abu Dhabi, U.A.E.

Phone 00971 2 6777 776
Fax 00971 2 6768 746

August 30, 2021
CF3G00129

ENCLOSURE INTEGRITY TEST REPORT

CF3G00129

Date of Test: **August 30, 2021** Time: **1:30 PM**
Tested by: **RAJASEKARAN ELUMALAI**
Job ID: **CF3G00129**

Company
Name: **PPC/ENNPI**
Address: **AGROD-AREA-030-EGYPT.**
EGYPT

Telephone: **01022994848** Facsimile:
E-mail: **mohamed.maher@enppi.com**
Contact: **Mohamed Maher**

Location
Name: **CRUDE OIL TANK FARM PROJECTS**
Address: **AGROOD-AREA-30**
AGROOD
EGYPT
Telephone: Facsimile:
E-mail: **ahmed.elshafie@enppi.com**
Contact: **Mr.Ahmed Elshafie**

Zone Number: **SUBSTIAON-30**
Zone Location: **CABLE CELLAR ROOM**
Zone Description: **CABLE CELLAR ROOM**

High Hazard: **ELECTRICAL AND PLC CABLES**
Height of High Hazard: **3.03 meters**
Minimum Protected Height: **2.23 meters**
Per:

Comments: **Cable cellar room doors Louver vent(Air vent) to be closed permanently .**

ENCLOSURE INTEGRITY TEST REPORT

CF3G00129

Zone Data

Protected Volume:	**1750.00 cu m**	
Maximum protected height:	**3.03 m**	(includes protected subfloor, if any)
Minimum Protected height:	**2.23 m**	
Temperature inside zone:	**28 C**	
Temperature outside zone:	**32 C**	
Suppression Gas:	**Novec 1230 Sapphire**	
Gas design concentration:	**4.50%**	
Weight/Volume of gas:	**0.00 kg**	

Maximum acceptable leakage area for 10 minute hold time: **8107.623 sq cm 0.811 sq m**

Test Checklist

Tanks disconnected?	**Y**
Free return air flow path?	**Y**
Outside air pressure tube connected?	**Y**
HVAC system off?	**Y**
Panel in discharge mode?	**N**
Dampers activated?	**Y**
Static pressure present?	**Y**

Test Data

Static pressure: **1.4 pa** **(air is blowing out of zone)**

Zone depressurization: **19.5 pa**

Air flow volume: **3816 cfm**

Orifice plate ratio: **1.00**

Indicated leakage area (depressurization): **4088.198 sq cm 0.409 sq m**

Zone pressurization: **20.2 pa**

Air flow volume: **4129 cfm**

Orifice plate ratio: **1.00**

Indicated leakage area (pressurization): **7479.933 sq cm 0.748 sq m**

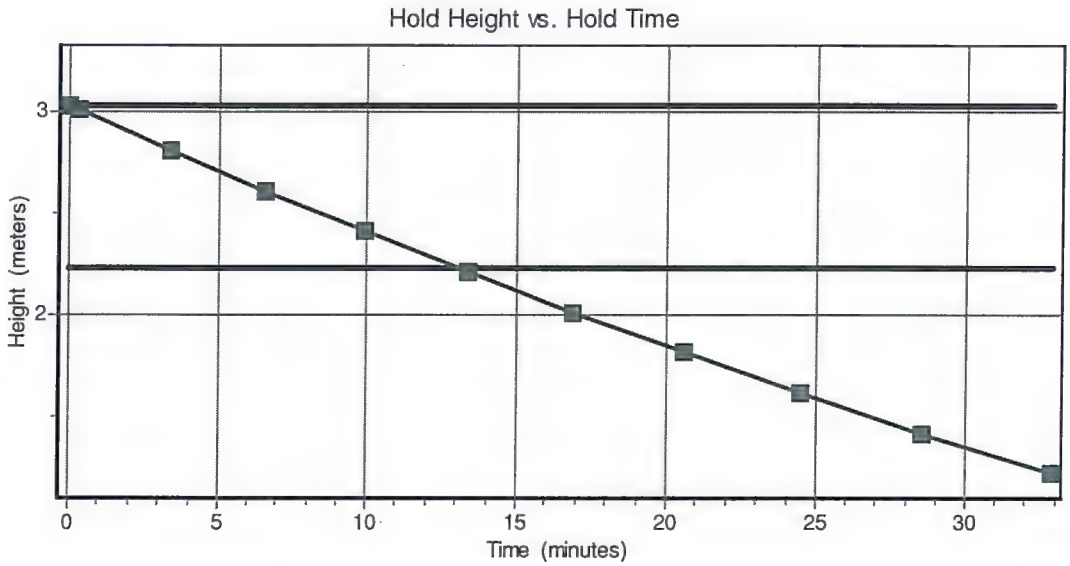
NFPA 2001, 2000 edition, Appendix C, Enclosure Integrity Test Procedure Leakage Area calculation results:

Leakage area: **5784.066 sq cm 0.578 sq m** Predicted hold time at **2.23 m is 12.99 minutes.**

ENCLOSURE INTEGRITY TEST REPORT

CF3G00129

Hold Height	Hold Time
3.03	**0.00**
3.01	**0.31**
2.81	**3.41**
2.61	**6.61**
2.41	**9.91**
2.21	**13.34**
2.01	**16.89**
1.81	**20.60**
1.61	**24.48**
1.41	**28.55**
1.21	**32.85**



ENCLOSURE INTEGRITY TEST REPORT

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Leakage Survey

Problem Area	Rsp	Cor	Comments
Walls floor to deck?		**Yes**	
Walls caulked at floor?	**N/A**		
Walls caulked at deck?	**N/A**		
Doors weather-stipped?		**Yes**	
Door, drop seals?		**Yes**	
Door closers installed and adjusted?		**Yes**	
Windows caulked?	**N/A**		
Exiting conduits sealed?		**Yes**	
Exiting cables sealed?		**Yes**	
Cable trays sealed?		**Yes**	
All holes, penetrations sealed?		**Yes**	
Floor drains trapped and filled?	**N/A**		
Dampers installed on all exiting ducts?			
Dampers working and adjusted?			
Block walls painted?		**Yes**	
Ceiling tiles clipped?	**N/A**		
HVAC shut down?		**Yes**	
Gas exhaust dampered?	**N/A**		
Gas exhaust damper closed?			

Rsp = Response
Cor = Corrected
Par = Partial
RY = Reported Yes
? = Unknown
N/A = Not Applicable
I/A = Inaccessible

ENCLOSURE INTEGRITY TEST REPORT

CF3G00129

Authority Having Jurisdiction

Name:	**RAJASEKARAN ELUMALAI**		
Title:	**COMMISSIONING ENGINEER**		
Company:	**TYCO FIRE and SECURITY**		
Telephone:	**00971563988654**	Facsimile:	**026768746**
E-mail:	**rajasekaran.elumalai@jci.com**		

Attendance

Mr. HAFEZ NOUR	**PPC** M. omar
Mr. HOSSAM SALAH	**ENPPI** for

Conditions

This test is a calculated prediction of the hold time and is based on the NFPA Enclosure Integrity Procedure, Appendix B, NFPA 12A, 1992 edition and Appendix C, NFPA 2001, 2000 edition and on the condition of the room at the time of the test. This test was conducted in accordance with the NFPA procedure.

The Software was produced by Fire Safety Technology division of Worldwide Trade & Services, Inc. and is based on the equations and calculations in the above cited NFPA standards.

The Fire Safety Technology division nor Worldwide Trade & Services, Inc. assumes no responsibility or liability for the passage of a discharge test or for maintaining the concentration of the suppression gas for the predicted time in case of an actual emergency.

To assure the sealing integrity of the zone, NFPA 2001, 2000 edition Section 4-4 requires an annual inspection and possible retesting of the zone.

Test conducted by:

Raj

RAJASEKARAN ELUMALAI

ATTENTION

This room is protected with a clean agent gaseous fire extinguishing system.

To be effective in a fire emergency the fire suppression agent must be retained in the room.

Upon installation of this system, all doors were equipped with automatic closers, weather stripping and floor seals; all cables and conduits leading in or out of the room were sealed (including those above the ceiling or under the raised floor); and all leaks or cracks were sealed. As required, the room was tested per NFPA 2001, 2000 edition, Appendix C, Enclosure Integrity Procedure to assure it was properly sealed to retain the fire suppression agent.

For the safety of the occupants and equipment in this room:

1. Doors must not be blocked open.
2. All weather stripping and seals must be maintained in good operating condition.
3. Any new cables or conduits leading in or out of the room must be caulked and sealed.
4. Any holes or penetrations through the walls must be repaired and sealed.

To assure the sealing integrity of this room, NFPA 2001, 2000 edition, Section 4-4 requires an annual inspection and possible retesting of this room.

Test results:

Date:	**August 30, 2021**	Leakage Area:	**0.578 sq m**
Minimum Hold Height:	**2.23 m**	Hold Time:	**12.99 minutes**

Next Inspection due one year from Test Date.

For more information or to schedule an inspection contact:

Tyco Fire & Security U.A.E. L.L.C.
P.O. Box 3333
Abu Dhabi, U.A.E.

Phone 00971 2 6777 776
Fax 00971 2 6768 746

System ID	030-LP-001
System Description	Substation building clean agent system

7.02- Piping Commissioning Check Lists

System ID	030-LP-002
System Description	Substation building & Guard house FACP Fire detction system

8- Mechanical pre-Commissioning

System ID	030-LP-001
System Description	Substation building clean agent system

System ID	030-LP-001
System Description	Substation building clean agent system

8.01- System Mechanical Index

System ID	030-LP-001
System Description	Substation building clean agent system

8.02- Equipment Drawings

System ID	030-LP-001
System Description	Substation building clean agent system

8.03- Equipment Datasheets

System ID	030-LP-001
System Description	Substation building clean agent system

8.04- Boxing-up Certificates

System ID	030-LP-001
System Description	Substation building clean agent system

8.05- Grouting Certificates

System ID	030-LP-001
System Description	Substation building clean agent system

8.06- Pre-Alignment Certificates

System ID	030-LP-001
System Description	Substation building clean agent system

8.07- Mechanical Pre-Commissioning Checklists

System ID	030-LP-001
System Description	Substation building clean agent system

9- Mechanical Commissioning

System ID	030-LP-001
System Description	Substation building clean agent system

9.01- Final Alignment Certificates

System ID	030-LP-001
System Description	Substation building clean agent system

9.02- Motor Solo Run Certificates

System ID	030-LP-001
System Description	Substation building clean agent system

9.03- Mechanical Run Test (MRT) Certificates

System ID	030-LP-001
System Description	Substation building clean agent system

9.04- Mechanical Commissioning Checklists

System ID	030-LP-001
System Description	Substation building clean agent system

9.05- Mechanical Supplier Check Lists & Reports

System ID	030-LP-001
System Description	Substation building clean agent system

10- Instrumentation Pre-Commissioning

System ID	030-LP-001
System Description	Substation building clean agent system

10.01- System Instrument Index

System ID	030-LP-001
System Description	Substation building clean agent system

10.02- Instrument Data Sheets

System ID	030-LP-001
System Description	Substation building clean agent system

10.03- Instrument Cable Schedule

System ID	030-LP-001
System Description	Substation building clean agent system

10.04- System Instrumentation Wiring Diagram

System ID	030-LP-001
System Description	Substation building clean agent system

10.05- Hook-up Drawing (Mechanical & Pneumatic)

System ID	030-LP-001
System Description	Substation building clean agent system

10.06- Instruments Cables Schedule

System ID	030-LP-001
System Description	Substation building clean agent system

10.07- Instruments Cables Laying Certificates

System ID	030-LP-001
System Description	Substation building clean agent system

10.08- Instruments Cables Termination Certificates

System ID	030-LP-001
System Description	Substation building clean agent system

10.09- Instruments Cables Testing Certificates

System ID	030-LP-001
System Description	Substation building clean agent system

10.10- Instruments Calibration Certificates

System ID	030-LP-001
System Description	Substation building clean agent system

10.11- Instrument Loop Checks Certificates

System ID	030-LP-001
System Description	Substation building clean agent system

10.12- Instrumentation Pre-Commissioning Check Lists

System ID	030-LP-001
System Description	Substation building clean agent system

10.13- Instrumentation Supplier Check Lists & Reports

System ID	030-LP-001
System Description	Substation building clean agent system

11- Instrumentation Commissioning

System ID	030-LP-001
System Description	Substation building clean agent system

11.01) Instrumentation Function Test Certificates

Enppi

MINUTES OF MEETING	PROJECT TITLE :	EGPC Crude Oil Tank Farms Project (AGROOD 30) (Module 01)	
	PROJECT No :	1251-100	DATE : 5-9-2021
	CUSTOMER :	EGPC (PPC)	

LOCATION : Agrood, Suez, EGYPT	MEETING DATE : 5-9-2021
WRITTEN BY : Ahmed El Shafie	DEPARTMENT : Commissioning & Startup
MEETING No : [MEETING No]	FILE No :

PURPOSE OF MEETING:

Fire & Gas Cause & Effect Verification Finalization for Agrood Area 30 (Module-01)

ATTENDEES:

ENPPI	PETROJET	PPC
Ali Ashraf	Sothy Selem	M. Omar

DISTRIBUTION:

10000-000-PM1-FRM-0005 (04/15)

MINUTES OF MEETING
(Cont'd)

PROJECT No : 1251-100	MEETING No : [MEETING No]	MEETING DATE : 5-9-2021

ITEM No	DESCRIPTION OF DISCUSSION	ACTION BY	DATE
	• This close-out meeting was held between ENPPI, PETROJET and PPC to certify the completion of Fire and gas cause-and-effect verification for Agrood area 30 entirely. • Fire and gas cause-and-effect verification have been tested, witnessed, and approved by PPC. • Signing off this MOM does not relieve any contractor from their contractual obligations. **Exceptions:** *GD-013 shall be fixed (cleared) Sobh * 2 smoke detectors in battery rooms. * 4 Gas detectors ZAM modules. Enppi: Ali Ashraf petrojet: Sobhy Saleem PPC: M. Omar		

System ID	030-LP-001
System Description	Substation building clean agent system

11.02- Instrumentation Supplier Check Lists & Reports

System ID	030-LP-001
System Description	Substation building clean agent system

12- Electrical Pre-Commissioning

System ID	030-LP-001
System Description	Substation building clean agent system

12.01- System Electrical Index

System ID	030-LP-001
System Description	Substation building clean agent system

12.02- Electrical Drawings

System ID	030-LP-001
System Description	Substation building clean agent system

12.03- Motor Datasheets

System ID	030-LP-001
System Description	Substation building clean agent system

12.04- Electrical Cables Schedule

System ID	030-LP-001
System Description	Substation building clean agent system

12.05- Electrical Cables Laying Certificates

System ID	030-LP-001
System Description	Substation building clean agent system

12.06- Electrical Cables Testing Certificates

System ID	030-LP-001
System Description	Substation building clean agent system

12.07- Electrical Cables Termination Certificates

System ID	030-LP-001
System Description	Substation building clean agent system

12.08- FAT Reports & Certificates

System ID	030-LP-001
System Description	Substation building clean agent system

12.09- SAT Reports & Certificates

System ID	030-LP-001
System Description	Substation building clean agent system

12.10- Electrical Pre-Commissioning Check Lists

System ID	030-LP-001
System Description	Substation building clean agent system

12.11- Electrical Supplier Check Lists & Reports

System ID	030-LP-001
System Description	Substation building clean agent system

13- Electrical Commissioning

System ID	030-LP-001
System Description	Substation building clean agent system

13.01- Electrical -Commissioning Check Lists

System ID	030-LP-001
System Description	Substation building clean agent system

13.02- Electrical Supplier Check Lists & Reports

System ID	030-LP-001
System Description	Substation building clean agent system

14- Red Marked-up Drawings

System ID	030-LP-001
System Description	Substation building clean agent system

14.01- P&ID

System ID	030-LP-001
System Description	Substation building clean agent system

14.02- Instrumentation Drawings

System ID	030-LP-001
System Description	Substation building clean agent system

14.03- Electrical Drawings